

WHAT IS CLAIMED IS:

1           1.     A storage subsystem, comprising:  
2           a controller having a plurality of ports;  
3           a plurality of storage devices configured store information;  
4           a lock table including attribute information and retention information for each  
5     of a plurality of storage volumes presented to a host device, the plurality of storage volumes  
6     including a non-virtual volume that maps to a first storage device of the storage subsystem  
7     and a virtual volume that maps to a second storage device of an associated storage subsystem,  
8     the associated subsystem being linked to the storage subsystem via a communication link,  
9           wherein the controller is configured to receive and process a request from a  
10   host to modify an attribute of the virtual volume.

1           2.     The storage subsystem of claim 1, wherein the lock table includes a  
2     permission field and a retention period field.

1           3.     The storage system of claim 1, wherein the controller includes a locker  
2     module that process the request from the host to modify the virtual volume that is located in  
3     the associated subsystem.

1           4.     The storage system of claim 3, wherein the locker module sends a  
2     request to modify the attribute of the virtual volume to a locker module of the associated  
3     subsystem.

1           5.     A method for managing a storage system, comprising:  
2           presenting a plurality of storage volumes to a host via a first storage  
3     subsystem, the plurality of storage volumes including a non-virtual volume that maps to a  
4     storage area within the first storage subsystem and a virtual volume that maps to a storage  
5     area within a second storage subsystem that is different from the first subsystem;  
6           receiving at the first subsystem a first request from a host to modify an  
7     attribute of a target storage volume, the target storage volume being one of the plurality of  
8     storage volumes presented to the host; and  
9           sending a second request from the first subsystem to the second subsystem if  
10   the target volume is determined to be the virtual volume, the second request being a request  
11   to modify the attribute of the target volume.

1                   6.        The method of claim 5, further comprising:  
2                   modifying the attribute of the target volume by a controller of the second  
3        subsystem according to the second request.

1                   7.        The method of claim 6, further comprising:  
2                   sending a first report of the attribute modification from the second subsystem  
3        to the first subsystem; and  
4                   sending a second report of the attribute modification from the first subsystem  
5        to the host.

1                   8.        The method of claim 5, further comprising:  
2                   modifying the attribute of the target volume by a controller of the first  
3        subsystem if the target volume is the non-virtual volume.

1                   9.        The method of claim 8, wherein the first subsystem includes a first  
2        locker module to process the first request from the host, and the second subsystem includes a  
3        second locker module to process the second request from the first subsystem.

1                   10.      The method of claim 5, wherein the first request is a request to lock the  
2        target volume to grant only read access to the target volume.

1                   11.      The method of claim 10, wherein the second request is a request to  
2        lock the target volume to grant only read access to the target volume.

1                   12.      The method of claim 10, wherein a lock table associated with the target  
2        volume is updated once the attribute of the target volume has been modified.

1                   13.      The method of claim 12, wherein the lock table includes an attribute  
2        field and a retention period field.

1                   14.      The method of claim 13, wherein the attribute of the target volume  
2        cannot be modified if a retention period associated with the retention field for the target  
3        volume is not expired.

1                   15.      The method of claim 5, wherein the first and second subsystems are  
2        disk array units.

- 1                   16.    A computer readable medium including a computer program for
- 2   managing a storage subsystem, the computer program comprising:
  - 3                   code for presenting a plurality of storage volumes to a host via a first storage
  - 4   subsystem, the plurality of storage volumes including a non-virtual volume that maps to a
  - 5   storage area within the first storage subsystem and a virtual volume that maps to a storage
  - 6   area within a second storage subsystem that is different from the first subsystem;
  - 7                   code for receiving at the first subsystem a first request from a host to modify
  - 8   an attribute of a target storage volume, the target storage volume being one of the plurality of
  - 9   storage volumes presented to the host; and
  - 10                  code for sending a second request from the first subsystem to the second
  - 11   subsystem if the target volume is determined to be the virtual volume, the second request
  - 12   being a request to modify the attribute of the target volume.
- 1                   17.    The computer program of claim 16, wherein the computer readable
- 2   medium is provided in a storage subsystem.